GIS Data Variables

Variable	Processing Approach/Method	Data Inputs	Data Outputs
Create Project Exchange Boundary Files	***For each Rural and Town Exchange Area Calculate the Population Density:***	Populated places boundaries; Digitize town boundaries where no Populated Place boundaries; Exchange Boundary Town; Exchange Boundary Rural	Unique polygons for rural and town exchanges.
	Step 1: Obtain CAD exchange files from VP and or State GIS Organizations.		
	Step 2: Convert CAD Polygons into shapefiles or Geodatae		
	Step 3: Convert Telephone Center Lat Longs into Point Shape file		
	Step 4: Union Exchange Boundary Polygons by Populated Places		
	Step 5: Create Project Exchange Boundary Geodatabase with unique codes for all rural and town exchanges		
Housing Density	***For each Rural and Town Exchange Area Calculate the Population Density:***	Census Block Population and Housing; Exchange Boundary Town; Exchange Boundary Rural	Total Housing Units Total Population Population Density (pop./sq. mi.) Housing Density (houses/sq. mi.)
	Step 1:Select all Census Block Centroids with each Exchange Boundary Rural; Do the same for Exchange Boundary Town		
	Step 2: Sum all housing and population for all Rural and Town Exchanges		
	Step 3: Divide population by each Rural and Town Exchange Area into housing or population/square mile.		
Street Mileage	***For each Rural and Town Exchange Area Calculate the Road Mileage by road type:***	StreetMap; Exchange Boundary Town; Exchange Boundary Rural	Road Mileage by road type
	Step 1: Clip Street Map lines to Exchange Boundary Rural; Do the same for Exchange Boundary Town		
	Step 2: Sum all roads by the road type (ACC/Surface type)and total for each Rural and Town Exchange		
Soil Texture or Parent Material	***For each Rural and Town Exchange Area determine the type of soil is next to all roads in each Rural and Town Exchange Area***	SSURGO Soils-Component Table with Soil Textures/Horizon Layers by Texture and/or Parent Material Tables; StreetMap; Exchange Boundary Town; Exchange Boundary Rural	Predominant Soil Textures (by soil horizons to 36" by Road Mileage Parent Material by Road Mileage Soil Texture by Construction Factor Average Construction Difficulty Factor
	Step 1: For each road do an "intersect" to attach SSURGO polygon attributes for each road segment.		
	Step 2: Join line attribute "MUID" to the SSURGO Component Material Table "MUID".		
	Step 3: Summarize Road Segment Mileage by Soil Texture or Parent Material by Horizon with thickest layer		
Bedrock within 36"	***For each Rural and Town Exchange Area determine the type of soil is next to all roads in each Rural and Town Exchange Area***	SSURGO Soils-Component Table for depth to Bedrock; StreetMap; Exchange Boundary Town; Exchange Boundary Rural	% Road Mileage With Bedrock Limits
	Step 1: For each road do an "intersect" to attach SSURGO polygon attributes for each road segment.		
	Step 2: Join line attribute "MUID" to the SSURGO Component Table "MUID".		
	Step 3: Summarize Road Segment Mileage by Soil Parent Material with Bedrock within 36 in.		
Frozen Ground	***For each Rural and Town Exchange Area determine the type of soil is next to all roads in each Rural and Town Exchange Area***	SSURGO Soils-Component Table for For Frost Free Days; StreetMap; Exchange Boundary Town; Exchange Boundary Rural	Est. % Frozen Ground Days by Exchange
	Step 1: For each road do an "intersect" to attach SSURGO polygon attributes for each road segment.		
	Step 2: Join line attribute "MUID" to the SSURGO Component Table "MUID".		
	Step 3: Summarize Road Segment Mileage by frost free days, convert by some factor to frozen ground		
Work days with > .5 in. of rain	***For each Rural and Town Exchange Area determine the number of days per month with rainfall greater than a .5 in.***	NCDC Wx Data (from SWAT source table); Exchange Boundary Town; Exchange Boundary Rural	Est. Number of Annual Work Days of rain > .5" for each Exchange % Est. Workdays with > .5" rain
	Step 1: For each Exchange Area Intersect Weather Stations		
	Step 2: For each exchange determine number of annual work days of rain > .5 in.		
Stream Crossings	***For each Rural and Town Exchange Area determine the number of estimated number of stream crossings if fiber cable is laid next to a road in each Rural and Town Exchange Area***	National Hydrography Database; StreetMap; Exchange Boundary Town; Exchange Boundary Rural	Number of Road Stream Crossings
	Step 1: Clip Hydrography data by exchange area boundaries		
	Step 2: Intersect Streetmap lines with hydrography lines with a "point" output file.		
	Step 3: Summarize the number of stream crossing for each exchange boundary.		
Wetlands	***For each Rural and Town Exchange Area determine the estimated number of wetland crossings if fiber cable is laid next to a road in each Rural and Town Exchange Area. Where possible calculate the distance involved.***	National Wetland Inventory; StreetMap; Exchange Boundary Town; Exchange Boundary Rural	Miles of Wetland Roads % Road Mileage with Wetlands
	Step 1: Clip Wetlands data by exchange area boundaries		
	Step 2: Intersect Streetmap lines with wetland polygons.		
	Step 3: Summarize the number of street-wetland segments for each exchange boundary.		
	Step 4: Summarize the length of street-wetland segments for each exchange boundary.		
Road Intersections	***For each Rural and Town Exchange Area determine the number of estimated road intersections in each Rural and Town Exchange Area***	ESRI Street Map	Number or Road intersections in each rural and town exchange.